

LUSHANG  
鲁商集团

FREDA  
福瑞达医药



**For younger life, for longer life!**  
让人们活得更年轻，生命更长久！

Foodgrade **SODIUM**  
**HYALURONATE**

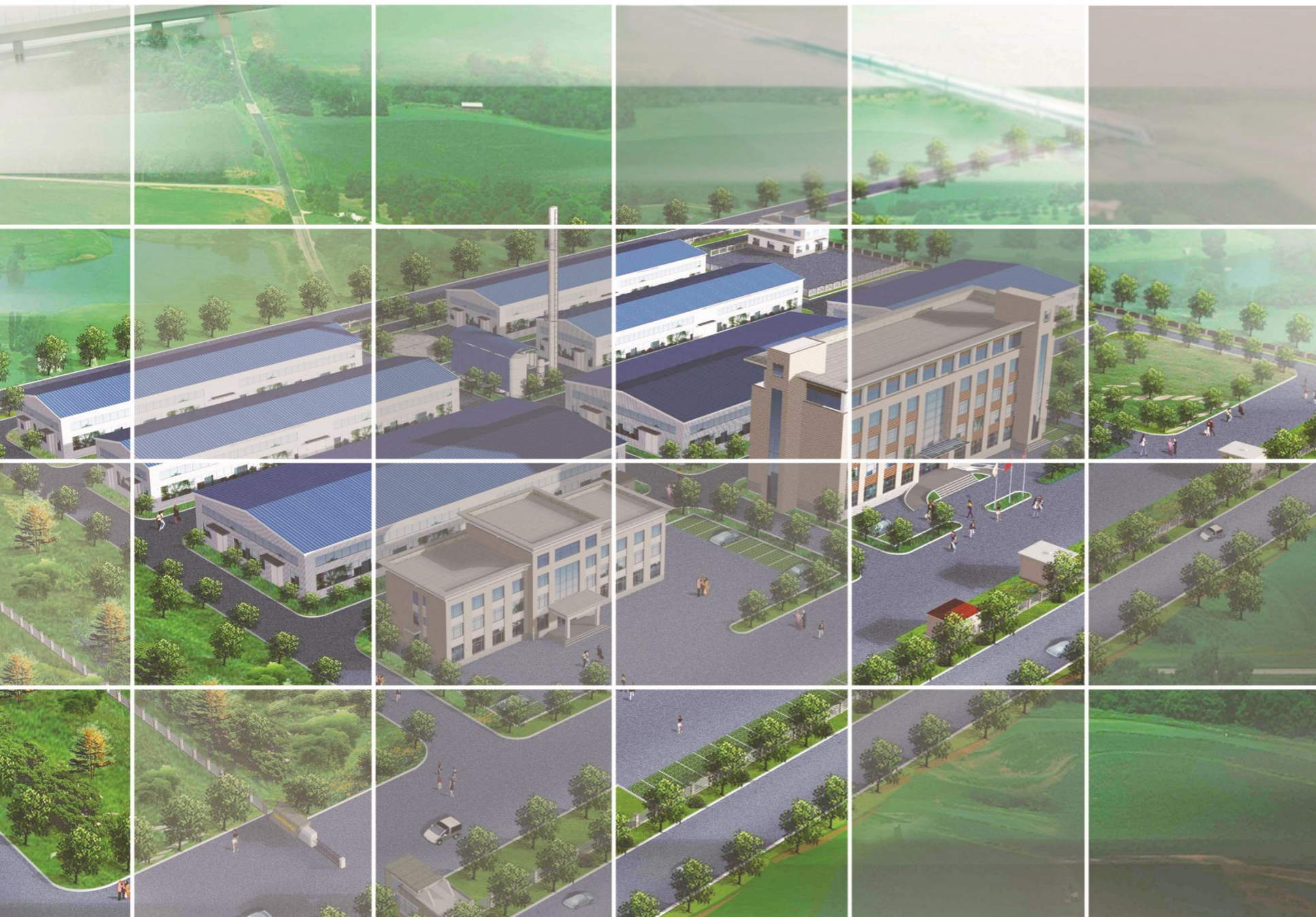
MANUFACTURER OF SODIUM HYALURONATE SERIES PRODUCT  
National High-Tech Enterprise



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Shandong Focusfreda Biotech Co.,Ltd

**MANUFACTURER  
OF SODIUM  
HYALURONATE  
SERIES PRODUCT**



## Company profile


Focusfreda is a leading Chinese manufacturer and supplier of Sodium Hyaluronate. We are located in Qufu city, Shandong Province, which is the hometown of Confucius. We specialize in manufacturing Sodium Hyaluronate as raw material for Skin Care, Personal Care and Nutritional Supplements. We are ISO9001, ISO22000, ISO14001 and ISO45001 certified. Our Sodium Hyaluronate is KOF-Kosher, Halal certified. We also get international Ecocert and Cosmos Certificate and Reach Exemption in EU. With professional services, we focus on products of high quality, high safety and high stability. Our Sodium Hyaluronate has been accepted by more than 4000 clients and been sold to 100 countries around the world. We are here for your high quality products and efficient cooperation!

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## Capacity Strength

At present, the general-grade sodium hyaluronate production capacity in the high-speed rail industrial park is 120 tons/year, and the planned pharmaceutical-grade production capacity is 7.5 tons/year; The planned production capacity of sodium hyaluronate in Lingcheng Industrial Park is 520 tons/year, and the current actual production capacity is 300 tons/year; sterile sodium hyaluronate 10 tons/year; Tremella fuciformis polysaccharide 30 tons/year.

## Cosmetic grade product list

- |  |  |
|--|--|
|  <b>Hyaskin®</b><br>Cosmetic Grade Sodium Hyaluronate       |  <b>Treme-HA®</b><br>Tremella Fuciformis Polysaccharide       |
|  <b>Hyaoligo™</b><br>Oligo Sodium Hyaluronate               |  <b>Hyacharming®</b><br>Oil-dispersed Sodium Hyaluronate      |
|  <b>Hyrinse®</b><br>Sodium Hyaluronate Solution             |  <b>Fullerene Sodium Hyaluronate Solution</b>                 |
|  <b>5M Hyaskin®</b><br>Multiple Sodium Hyaluronate Solution |  <b>HA Pro®</b><br>Acetylated Sodium Hyaluronate              |
|  <b>HA Plus®</b><br>Cationic Hyaluronic Acid                |  <b>Hyamicro™</b><br>Sodium Hyaluronate Fermentation Filtrate |

## Food grade product list

- |  |   |
|--|---|
|  <b>Hyafood®</b><br>Food Grade Sodium Hyaluronate |  <b>Treme-max®</b><br>Tremella Fuciformis Polysaccharide |
|--|---|

## Qualifications



National High-tech Enterprise



Shandong Engineering Laboratory



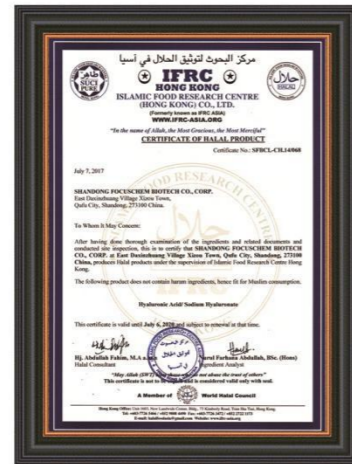
Cooperate with Jiangnan University



KOSHER



EFCCI GMP



HALAL



ISO22000

### Food Grade Production License of Sodium Hyaluronate



国家市场监督管理总局监制



ISO9001



ISO14001



ISO45001



国家市场监督管理总局监制



ECOCERT COSMETICS



COSMOS



VEGAN

# Hyafood®

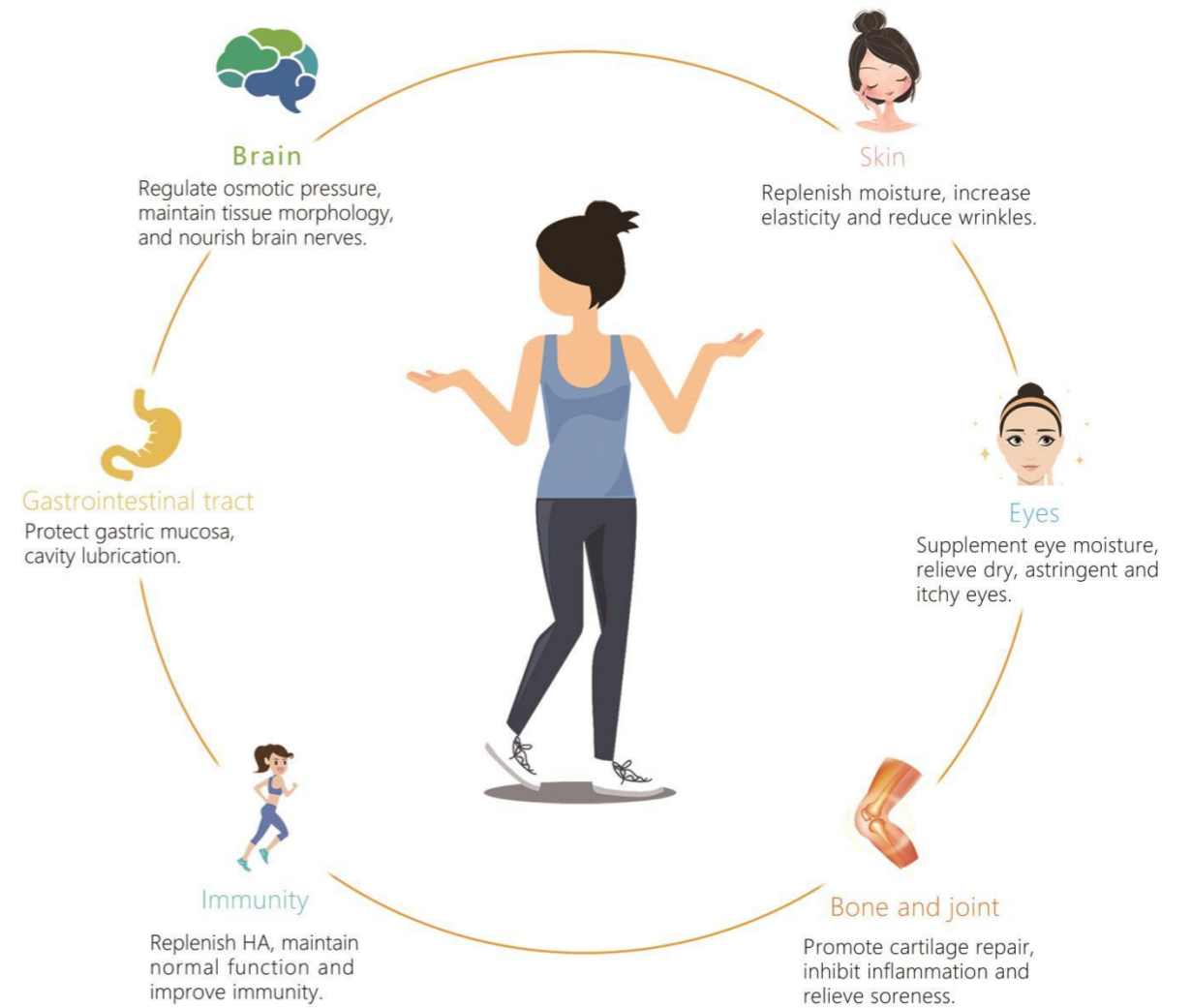
Food Grade Sodium Hyaluronate



Hyafood® Food Grade Sodium Hyaluronate

Hyafood®  
Food Grade Sodium Hyaluronate

## Hyafood® Schematic diagram of how it works in the human body

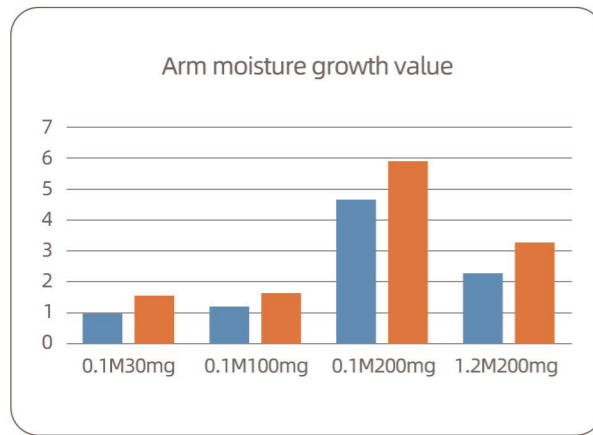
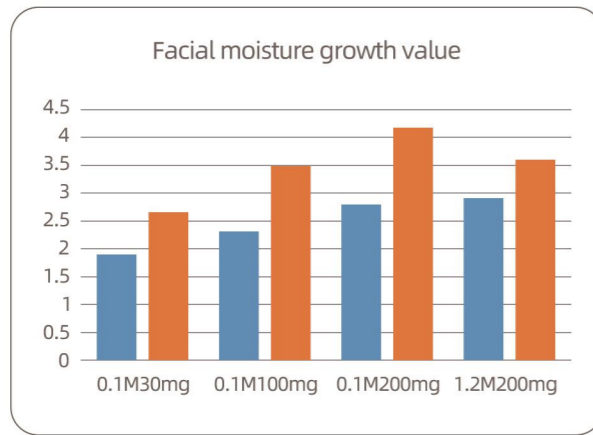


Hyafood® Food Grade Sodium Hyaluronate

Sodium Hyaluronate has been widely used in the industry of nutraceuticals in US and EU. The oral Sodium Hyaluronate can support Hyaluronic Acid levels in the body. Hyafood® can be digested and absorbed, making the skin moist, smooth, soft and elastic; delaying aging and preventing the occurrence of arthritis and brain atrophy. The oral Sodium Hyaluronate can help people have full energy and youthful vigor.

## Beauty effect

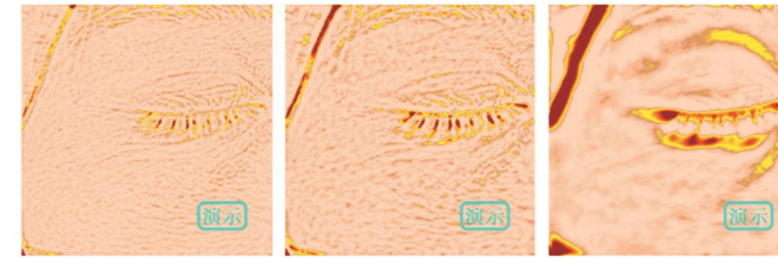
### Improve skin moisture



■ Two weeks later  
■ Five weeks later

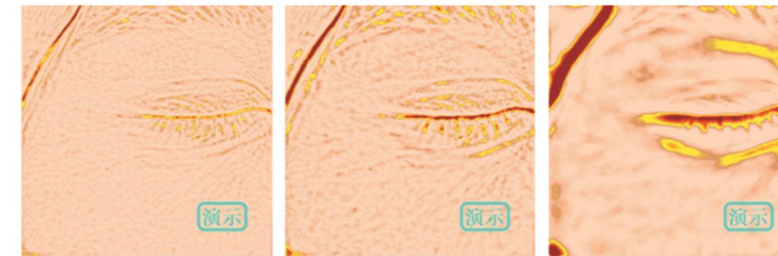
■ Two weeks later  
■ Five weeks later

### Improve skin wrinkles



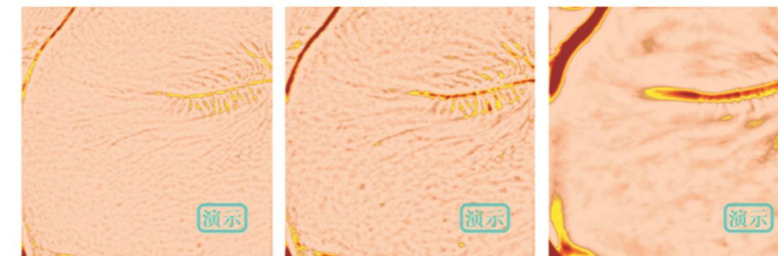
(Fine lines contrast)  
Before drinking

Fine lines      wrinkle



(Fine lines contrast)  
Two weeks after drinking

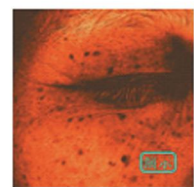
Fine lines      wrinkle



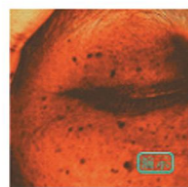
(Fine lines contrast)  
Five weeks after drinking

Fine lines      wrinkle

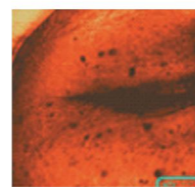
### Reduce pigmentation



Before drinking

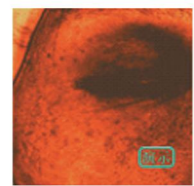


Two weeks after drinking

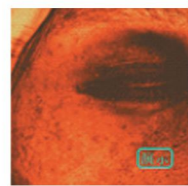


Five weeks after drinking

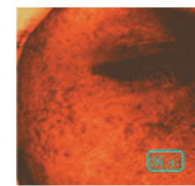
(Pigment contrast)



Before drinking



Two weeks after drinking



Five weeks after drinking

(Pigment contrast)

Hyafood® Food Grade Sodium Hyaluronate

Hyafood® Food Grade Sodium Hyaluronate

# Hyafood®

## Ordinary Food Materials

beverages, candy, dairy products, etc.

## Health Food Raw Materials

tablets, capsules, and granules are commonly used types, and are usually used in combination with collagen, chondroitin sulfate, and glucosamine.

## Functional Drink

oral liquid, beverage, etc.



## Product specification

<b>Item</b>	A. Infrared absorption spectrophotometry			Sodium Hyaluronate
<b>Standard</b>	B. It gives reaction (a) of sodium			≥95%
<b>Item</b>	Appearance of Solution	Nucleic Acids	pH (0.5% aq. sol., 25°C)	Molecular weight
<b>Standard</b>	A <sub>600nm</sub> ≤ 0.01	A <sub>260nm</sub> ≤ 0.5	5.0-8.5	3,000-3,000,000 Da
<b>Item</b>	Intrinsic viscosity	Protein	Loss on drying	Chlorides
<b>Standard</b>	0.19-40.6 DL/G	≤0.1%	≤10.0%	≤0.5%
<b>Item</b>	Iron	TAMC	Escherichia coli Salmonella	Salmonella
<b>Standard</b>	≤ 80 PPM	≤100 CFU/G	NEGATIVE/G	NEGATIVE/G

## Hyafood instructions for use.

Notes: Insoluble in organic solvents.





# Treme-max®

Food Grade Tremella Polysaccharide



Treme-max® Food Grade Tremella Polysaccharide

Treme-max® Food Grade Tremella Polysaccharide



Treme-max®  
Food Grade Tremella Polysaccharide

As one of the traditional Chinese delicacies, tremella has been a nourishing sacred product since ancient times. The history of edible tremella in China can be traced back to the Northern and Southern Dynasties.

Li Shizhen's "Compendium of Materia Medica" quoted Liang Dynasty's famous doctor Tao Hongjing in "Famous Doctors" stating: "Only the old mulberry tree produces Jew's Ear on Mulberry tree, and there are green, yellow, red, and white ones." The "white" is the tremella. "Chinese Materia Medica" claims that it has the effects of strengthening essence, tonifying the kidney, moisturizing the intestines, tonifying qi, harmonizing blood, tonifying brain, beautifying, and rejuvenating skin. Zhang Ren'an, a scholar in the Qing Dynasty, said it "has the nourishment of Ophiopogon japonicus without its coldness, it has the sweetness of Polygonatum odoratum but not its greasiness, and sincerely nourishes the lungs and nourishes the yin."

Modern medicine believes that tremella has the effects of regulating immunity, lowering blood sugar and lipids, and preventing cardiovascular diseases.

### Traditional planting and current large-scale planting

The quality of tremella cultivation and environmental control directly affect the extraction rate and molecular weight of tremella fuciformis polysaccharide, so the selection of tremella is particularly important. Our company has an exclusive tremella plantation base-Shandong Tongkang Agricultural Development Co., Ltd. The company occupies an area of 15,000 square meters with a planned annual output of 300 tons of dry tremella. Currently, 40 greenhouses have been constructed and the current production capacity is 100 tons per year.

### Advantages of tremella Planting Base

At present, the cultivation of tremella in my China is mainly concentrated in Fujian, Sichuan, and Hubei. There are problems such as limited production capacity in retail cultivation, unstable quality of tremella, and uncontrolled pesticides and planting environment. Shandong Tongkang Agricultural Development Co., Ltd. was built and put into operation in 2019, and has realized the industrialization and large-scale production of tremella.



1 Large-scale planting, fully automatic greenhouse control: The optimum temperature for tremella planting is 23-25°C, and the humidity is 80-90%. The fully automatic greenhouse can automatically detect the temperature and humidity in the shed, and realize 24-hour temperature and humidity control;

2 Use natural vegetarian raw materials: the raw materials used for planting require sawdust, wheat bran, soybean powder, etc. in addition to tremella spores. The raw materials used in the base are guaranteed to be all natural vegetarian sources, and tremella has obtained China's organic product and green food certification;

3 Green planting: The base is all grown indoors. All raw materials are sterilized before use to reduce the risk of tremella disease. No pesticides are used in the planting process to ensure green and safe products.

### The composition of tremella fuciformis polysaccharide

Tremella fuciformis polysaccharide is the main active ingredient of tremella. It has no sweet taste and is easily soluble in water. Its main chain structure is mannans connected by α-(1→3) glycosidic bonds, and the branched chain is composed of glucuronic acid and xylose. Polysaccharide etc.

### The efficacy of tremella fuciformis polysaccharide

Oral administration of tremella fuciformis polysaccharide can significantly increase the water content of the skin and make the skin smooth, delicate and shiny.

After drying the skin of Kunming mice, the mice were given 400 mg/kg, 200 mg/kg, and 100 mg/kg tremella fuciformis polysaccharide daily for 20 consecutive days in the high, medium and low dose groups. After 20 days, the mouse skin moisture content was tested. The results are as follows:

Tab.2.4 Comparison of water content of each group after oral administration (Mean±SD,n=10)

Group	Skin moisture content	
	Body surface method	Oven method (%)
N	19.520±0.316 <sup>#</sup>	78.871±0.869 <sup>#</sup>
M	17.220±0.594 <sup>*&amp;</sup>	64.060±0.940 <sup>*&amp;</sup>
High-TP	19.190±0.281 <sup>#</sup>	78.423±0.546 <sup>#</sup>
Med-TP	18.760±0.502 <sup>*#&amp;</sup>	75.700±1.021 <sup>*#&amp;</sup>
Low-TP	18.620±0.514 <sup>*#&amp;</sup>	73.167±0.946 <sup>*#&amp;</sup>

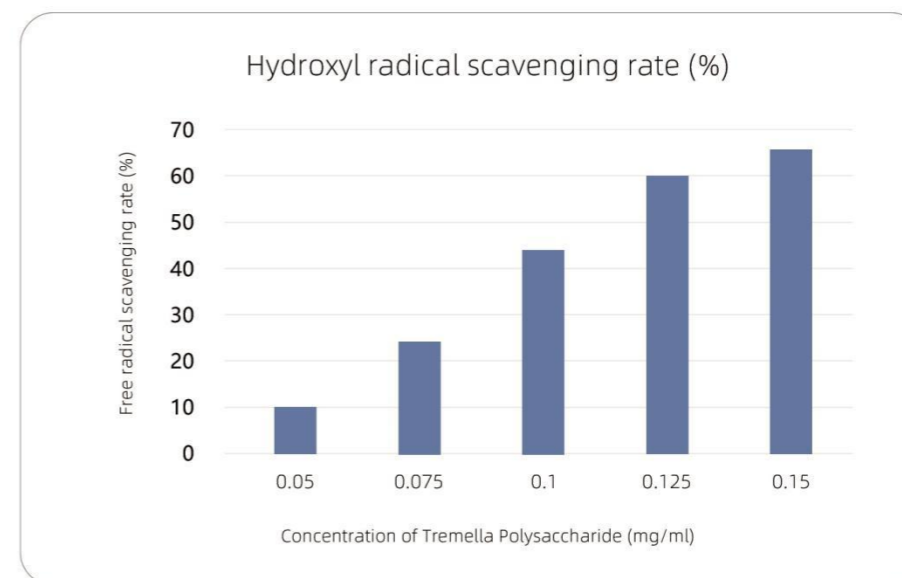
Anti-oxidant and anti-aging

Tremella fuciformis polysaccharide can effectively scavenge DPPH free radicals, superoxide free radicals and hydroxyl free radicals, prevent the damage of free radicals to the body, prevent aging, anti-aging, and prolong life.

### Tremella polysaccharides scavenging hydroxyl free radicals

Principle: Use H<sub>2</sub>O<sub>2</sub> and Fe<sub>2</sub><sup>+</sup> to mix to produce .OH, add salicylic acid to the system to capture .OH and produce a colored substance, which has a maximum absorption at 510nm.

Process: Add 1ml of 8.8mmol/L H<sub>2</sub>O<sub>2</sub>, 1ml of 9mmol/L of FeSO<sub>4</sub> and 1ml of 9mmol/L of salicylic acid-ethanol solution to the reaction system, and finally add polysaccharide solutions of different concentrations. After reacting at 37°C for 0.5h, use water as the reference Test the absorbance value at 510nm, and calculate the scavenging rate of free radicals based on the absorbance value



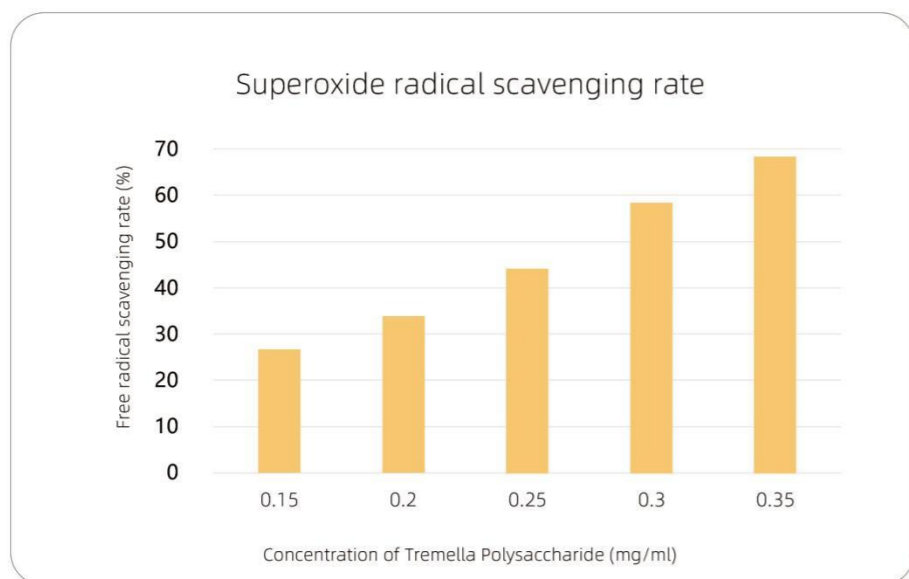
Principle: The use of pyrogallol can rapidly self-oxidize under alkaline conditions, releasing O<sub>2</sub><sup>-</sup> and generating colored intermediate products. After the reaction starts, it turns yellow-green first, and turns to yellow after a few minutes, and the linear time is maintained at 3-4min. Adding Tremella polysaccharide solution inhibited its auto-oxidation rate, and the luminosity value of the solution was measured at 325nm.

Treme-max® Food Grade Tremella Polysaccharide

Treme-max® Food Grade Tremella Polysaccharide

Process: Take 4.5ml of Tris-HCl buffer solution with pH 8.2, 5mmol/L, 4.2ml of distilled water, mix 0.3ml of 3mmol pyrogallol preheated at 25°C, shake it quickly and pour into colorimetric Cup, measure the absorbance at 325nm every 10s, and calculate the increase in absorbance per minute in the linear range.

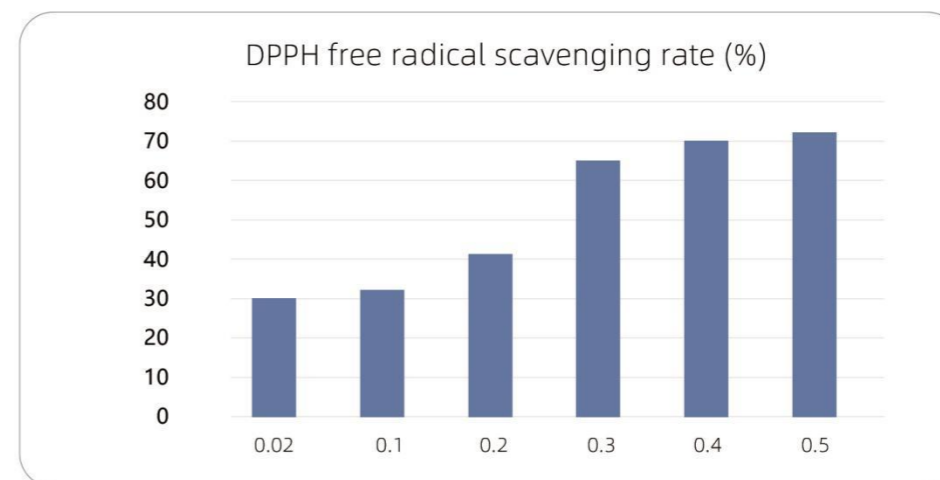
The experimental group was added with a certain polysaccharide solution and then determined according to the pyrogallol auto-oxidation method. And calculate the superoxide radical scavenging rate



#### Scavenging DPPH free radical test

Add 50 microliters of test solution and control group (absolute ethanol) of different concentrations of Tremella fuciformis polysaccharide to 96-well plates, react for 30 minutes at room temperature in the dark, set 3 replicate wells for each reaction, and set test solution + ethanol control at the same time group

Ao	50μL DPPH solution + 50μL absolute ethanol
Ai	50μL DPPH solution+50μL solution to be tested
Aj	50μL Test solution+50μL absolute ethanol



#### Beauty

In vitro experiments have proved that Tremella polysaccharide can significantly increase the activity of skin keratinocytes and skin fibroblasts SOD, while the MDA of skin cells is significantly reduced.

#### Hypoglycemic and lipid-lowering effects

Tremella fuciformis polysaccharide can regulate the level of insulin, regulate blood sugar metabolism, and lower blood sugar levels. Tremella polysaccharide molecules are saturated with hydroxyl groups and carboxyl groups and have strong hydrophilicity, which can adsorb lipids and cholesterol and prevent the absorption of lipids. At the same time, Tremella polysaccharides can be combined with bile acid to promote the excretion of bile acid from the body and make cholesterol metabolism go smoothly. And lower blood lipids.

#### Immune regulation

Relevant studies have shown that Tremella fuciformis polysaccharide exerts immunoregulatory functions through humoral immunity, cellular immunity and cytokine generation, and has a certain inhibitory effect on cervical cancer, liver cancer and other tumors in mice.



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